CSE341 Quiz 02

ID: **Total Marks: 15**
                                                          Duration: 20 mins
Name: **Sec:**

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1. **State** the name of the section (BIU or EU) the following component falls into: **[0.5x4=2]**
   a) SI - EU
   b) IP - BIU
   c) Instruction Queue - BIU
   d) DH - EU
2. Using the table, answer the following question **[1x2=2]**

Address	10500h	10501h	12300h	12301h	20500h	20501h	21700h	21701h
Data	23h	12h	51h	76h	15h	67h	91h	47h

Given DS = 1000h, SS = 2000h, CS = 3000h, BP = 0500h, SI = 0200h

a) The value stored inside the register for **MOV AH, [BP+SI+1000h]**

b) Suppose the register (BX) holds 7651h. Find value of DI register from **MOV BX, [DI + 2000h]**

   a) (SSx10h) + BP+SI+1000h = 20000h + 0500h + 0200h + 1000h = 21700h

   So the low byte is 91h and high byte is 47h . So AH stores 47h.

   b)   7651h value is stored in location 12300h.

      (DSx10) + DI + 2000 = 12300

      10000 + DI + 2000 = 12300
      DI = 12300 - 10000 - 2000 = 0300

3. Using the above table and segment register values, do this calculation. The instruction JMP[BP] is executed. **Calculate** the value of IP. Now, **deduce** the physical address of the location 8086 will jump into. : **[1+1 = 2]** *(space on next page for the answer)*

Location where IP is stored = DSx10 + BP = (1000 * 10) + 0500 = 10500h
Value of IP = 1223h
Location where 8086 will jump to = (CSx10) + IP = 30000 + 1223 = 31223h

4. **State** the addressing mode of the following. Write Invalid, if it is invalid. **[0.5x5=2]**
   a) MOV CL, [SI] -   Register Indirect
   b) MOV [5123h], AX - Direct addressing
   c) MOV BH, BL - Register Direct
   d) MOV 4123h, AX - Invalid
5. **Write** the values of status flags(PF, AF, ZF, SF, CF, OF) values after the following instruction set: **[2]**
MOV AX, DBCAh
MOV BX, 4667h
ADD BX, AX

6. Write the corresponding instruction from the given hex code using the given table **[2.5x2=5]**
   a) 88264567h
   b) 8B936789h

a) 88 26 = 10001000 00100110   Low byte = 45   high Byte= 67h

100010 = MOV operation   final answer = MOV [6745h], AH

0 (7th bit) = register is in source

0 (8th bit) = 1 byte register size

00 (9th & 10th bit) = MOD 00

100 (reg) =   AH

110 (R/M) = direct address

b) 8B 93 = 10001011 10010011

100010 = MOV operation   final answer = MOV DX, [BP+DI+8967h]

1 (7th bit) = register is in destination

1 (8th bit) = 2 byte register size

10 (9th & 10th bit) = MOD 10 (16 bit offset)

010 (reg) =   DX

011 (R/M) = [BP+DI+d16]

RM \ MOD	00	01	10	11 W = 0	W = 1
000	[BX] + [SI]	[BX] + [SI] + d8	[BX] + [SI] + d16	AL	AX
001	[BXI + [DI]	[BX] + [DI] + d8	[BX] + [DI] + d16	CL	CX
010	[BP] + [SI]	[BP] + [SI] + d8	[BP] + [SI] + d16	DL	DX
011	[BP] + [DI]	[BP] + [DI] + d8	[BP] + [DI] + d16	BL	BX
100	[SI]	[SI] + d8	[SI] +d16	AH	SP
101	[DI]	[DI] + d8	[DI] +d16	CH	BP
110	d16 (direct address)	[BP] + d8	[BP] +d16	DH	SI
111	[BX]	[BX] + d8	[BX] + d16	BH	DI

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1. **State** the name of the section (BIU or EU) the following component falls into: **[0.5x4=2]**
    a) DI - EU
    b) AH - EU
    c) Instruction Queue - BIU
    d) ALU - EU
2. Using the table, answer the following question **[1x2=2]**

Address	20600h	20601h	23800h	23801h	30600h	30601h	32300h	32301h
Data	15h	67h	91h	47h	23h	12h	51h	76h

Given DS = 3000h, SS = 2000h, CS = 1000h, BP = 0600h, SI = 0200h

a) The value stored inside the register (AH) for **MOV AH, [BP+SI+3000h]**

b) Suppose the register (BX) holds 7651h. **Find** value of DI register from **MOV BX, [DI + 2000h]**

c) (SSx10h) + BP+SI+3000h = 20000h + 0600h + 0200h + 3000h = 23800h

So the low byte is 91h and high byte is 47h . So AH stores 47h.

d) 7651h value is stored in location 32300h.

   (DSx10) + DI + 2000 = 32300

   30000 + DI + 2000 = 32300

   DI = 32300 - 30000 - 2000 = 0300

3. Using the above table and segment register values, do this calculation. The instruction JMP[BP] is executed. **Calculate** the value of IP. Now, **deduce** the physical address of the location 8086 will jump into. : **[1+1 = 2]** (space on next page for the answer)

Location where IP is stored = DSx10 + BP = (3000 * 10) + 0600 = 30600h
Value of IP = 1223h
Location where 8086 will jump to = (CSx10) + IP = 10000 + 1223 = 11223h

4. **State** the addressing mode of the following. Write Invalid, if it is invalid. **[0.5x5=2]**
    a) MOV CL, BL - Register direct
    b) MOV DX,[AL] - Register Indirect
    c) MOV 1231h, BL - invalid
    d) MOV [2142h], AX - Direct addressing
5. **Write** the values of status flags(PF, AF, ZF, SF, CF, OF) values after the following instruction set: **[2]**
MOV AX, 12A8h
MOV BX, 8578h
ADD BX, AX

6. Write the corresponding instruction from the given hex code using the given table **[2.5x2=5]**
    a) 88164567h
    b) 8BB36789h

a) 88 16 = 10001000 00010110   Low byte = 45   high Byte= 67h
100010 = MOV operation   final answer = MOV [6745h], DL
0 (7th bit) = register is in source
0 (8th bit) = 1 byte register size
00 (9th & 10th bit) = MOD 00
010 (reg) =   DL
110 (R/M) = direct address

b) 8B B3 = 10001011 10110011
100010 = MOV operation   final answer = MOV SI, [BP+DI+8967h]
1 (7th bit) = register is in destination
1 (8th bit) = 2 byte register size
10 (9th & 10th bit) = MOD 10 (16 bit offset)
110 (reg) =   SI
011 (R/M) = [BP+DI+d16]

RM \ MOD	00	01	10	11 W=0	11 W=1
000	[BX] + [SI]	[BX] + [SI] + d8	[BX] + [SI] + d16	AL	AX
001	[BXI + [DI]	[BX] + [DI] + d8	[BX] + [DI] + d16	CL	CX
010	[BP] + [SI]	[BP] + [SI] + d8	[BP] + [SI] + d16	DL	DX
011	[BP] + [DI]	[BP] + [DI] + d8	[BP] + [DI] + d16	BL	BX
100	[SI]	[SI] + d8	[SI] +d16	AH	SP
101	[DI]	[DI] + d8	[DI] +d16	CH	BP
110	d16 (direct address)	[BP] + d8	[BP] +d16	DH	SI
111	[BX]	[BX] + d8	[BX] + d16	BH	DI